Amnesia for Limbs

Diagnostic Value of Syndrome

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AMNESIA for the limbs of one side of the body is a symptom often encountered by those who treat cases of cerebral vascular lesions and tumors. The syndrome was known even before the turn of the century but did not come into general recognition in this country until about 1935. The amnesia may be episodic or constant, and it may be so severe that the patient has a delusion that the limbs are absent.

When the patient has amnesia for his limbs (usually the minor ones) he simply acts as though they were not there. He uses the leg for walking, usually deviating toward the affected limb, without stopping to think it strange that he can walk, but he does not pick anything up with the left hand and does not raise it when asked to raise his hands. He may allow the forgotten limb to hang over the side of the bed or he may awaken at night with what he considers the limb of another person across him.

In cases previously reported several striking manifestations have been encountered. A dentist bathed and dried the right side of the body and did not touch the left side until his wife called his attention to the fact. He then finished the bath but in dressing finished with the left side undressed. A woman was sitting in church when cerebral thrombosis involving the left limbs occurred. She said her left arm seemed to drop off and disappear and she had to examine herself with the right hand to determine that her left was still there. Another woman complained that her dead brother-in-law's arm was across her all the time and that an old rusty foot was in bed with her.

Whether the left side of the body can be reestablished in the patient's memory in time depends at least in part on the patient's psychologic make-up. Persons who are hard-headed factualists insist that the absence of one side is an absurdity and that they merely *feel* as though the left limbs are absent. Those who are gullible readily accept the absence of the limbs as fact. If the patient lives for six months or more after the amnesia develops he usually regains memory for the limbs; the longest period of amnesia for limbs so far observed was five years and in that case the patient died without recovering from the amnesia.

The system in the brain essential to remembering the limbs is the supramarginal cortex, thalamo-supramarginal peduncle of fibers, and the pulvinar of the thalamus. In all of 50 cases so far observed at autopsy the lesion was in the thalamus (pulvinar), in the supramarginal cortex, or between the two. Six cases have been observed in which the lesion was on the left side of the brain and the right limbs were involved. However, in most instances of such lateralization the patient, because of aphasia, cannot state his problem. Three additional cases in which the symptom was valuable in establishing localization of the lesion are herewith reported.

REPORT OF CASES

CASE 1: A woman 42 years of age had a seven-year history of numbness of left limbs with development of Jacksonian seizures without loss of consciousness. There was amnesia for the left hand and partial astereognosis.

The past history was irrelevant except for three accidents. The first was an automobile accident 11 years before in which a knee was cut but there was virtually no injury of the head. The symptoms, however, began after this. In a second automobile accident, seven years previously, the teeth were broken. After this episode the symptoms became lateralized. One year before coming under observation the patient bumped her head on a piece of furniture and afterward had headaches.

After the first accident attacks of numbness of the fingertips of both hands and of the lips developed. The numbness was associated with a severe itch, not actual pain. After the second accident the numbness was lateralized to the left arm and leg and never disappeared entirely. About one year before the patient was examined by the author an attack occurred in which the left leg straightened out and the foot inverted. In that episode the patient fell. The patient described other attacks characterized by weakness, blurring of vision and straightening of the leg. More recently amnesia for the left hand had developed, with the patient occasionally unaware of having the hand or of holding anything in it. Because of this she had dropped things.

No significant abnormalities were noted in a general physical examination. Upon neurological examination, normal sense of smell was noted, but there was loss of interest and attention in homonymous half-fields at all times, with the so-called extinction phenomenon. At other times complete homonymous hemianopia was observed. The pupils were unequal, the left being larger, but reaction to light was good. The fundi of the eyes were normal, and hearing was normal. The hand grips were equally weak. All deep reflexes were increased on the left but Babinski's sign was not elicited. There were hypesthesia to touch in the left hand and a defective stereognosis. At times it was clear that the patient forgot the left limbs; she acted as though they were paralyzed or absent. When objects were placed into the left hand she did not accept them unless her attention was called to them. When asked to pick up anything with the left hand she used the right unless it was restrained.

A neoplasm (meningioma of the petrous ridge) was considered most probable. No lesion was observed in an air encephalogram. The patient's symptoms continued.

CASE 2: A woman 50 years of age complained of periods of automatic behavior and bad memory. The patient had had tonsillectomy, appendectomy, removal of a tumor from the right breast, a rectal operation, and a hysterectomy. In an automobile accident 16 years previously, internal injuries and multiple fractures, including one of the pelvis, had occurred and the patient was unconscious for several days. A year later she was hospitalized and diagnosis of a functional condition was made. The patient was treated at various clinics and lost jobs because of "too much time out." The current diagnosis was hyperinsulinism. The liver "was not supposed to be working right."

The patient's chief complaint, however, was that of doing things without knowing later what she had done. She had transferred from one street car to another and had found herself out on a trip without knowing the purpose of it. She had episodes of smelling horrible odors of which she could not find the source, and she had concluded that the odors followed her about. She also had severe unilateral headaches but also headaches on both sides extending from the eyes back over the head.

Further, there were periods of wakening at night with delusion that the left side of the body was absent. At times, the patient said, she hunted with the right hand for the left and when she located it, it was cold and clammy. She shook it and rubbed it to reestablish life, which seemed to be gone.

No abnormality was observed in a general physical examination. In a neurological examination, anosmia was noted. This the patient explained on the basis of nasal congestion. However, the patient had dysosmia; certain perfumes made her nauseated, and bacon and coffee did not smell as they had earlier in her life. The pupils and eyegrounds were normal. There were no reflex changes, no abnormal reflexes, no loss of sensory perception, and no astereognosis. Consid-

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erable emotional distress had developed "because" of the difficulties described by the patient. A tentative diagnosis of tumor at the base of the brain on the right side, perhaps a meningioma, was made and operation was recommended.

CASE 3: A woman 38 years of age was referred with complaint of a feeling of unsteadiness when walking or standing. Although the patient considered herself to have been well up to three weeks before, inquiry elicited that there had been cacosmia seven months previously. At that time she had episodes of smelling foul odors which followed her about, and at the same time she had pains on the left side (which seemed to have been central in origin). She complained of feeling heavier on the left side; she stated that she was pushing three people ahead of her on that side and had poor use of the left hand. At times there was a sensation described as that of a vibrating machine affecting the left limbs, and the left leg would go to sleep, with soreness and a pin-and-needle sensation in it. The left limbs, the patient said, were cold and purple.

Upon physical examination the blood pressure was 160 mm. of mercury systolic and 104 mm. diastolic, and the pulse rate was 90 per minute. The muscles in general were doughy to palpation as in muscular dystrophy, but the skin was normal. In a neurological examination the sense of smell, fields of vision, and fundi of the eye were noted to be normal. However, the right pupil was 5 mm. and the left 3 mm. in diameter. The other cranial nerves were not affected. Except for absence of the tendoachillis reflexes, all deep reflexes were present and symmetrical although slight. Plantar response was entirely absent, and no pathological reflexes could be elicited. Sensory perception was normal throughout. Psychologically the patient was depressed, felt "beaten" and "heavy," and stated that life was not worth living.

Three weeks later the deep reflexes were absent. The patient did not use her left hand and acted as though it were absent unless she was asked to use it. In walking there was deviation to the left as in hemianopia, which, however, was not present. Bilateral simultaneous stimulation was perceived only on the right side.

COMMENT AND CONCLUSIONS

In three cases of amnesia for limbs, there were olfactory hallucinations in two, central pain in one, focal seizures with automatism in one, and the extinction phenomenon in two. The amnesia for limbs gave positive evidence of presence of the lesion in the thalamoparietal peduncle in each case and thus enabled determination of the anatomical site and also the extent of the lesion. If the symptom of amnesia for limbs is kept in mind, it is not difficult to detect even when the patient himself is unaware of it. As an aid in establishing the location of a cerebral lesion it is a valuable symptom. When the lesion is on the major side the patient usually cannot speak of it because of aphasia.

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